

**REMARKS**

Reconsideration and allowance of the subject application are respectfully requested. Upon entry of this Amendment, claims 1-10 are pending in the application. In response to the Office Action, Applicant respectfully submits that the pending claims define patentable subject matter.

As a preliminary matter, Applicant thanks the Examiner for indicating that claims 2-8 and 10 would be allowable if rewritten independent form. However, Applicant respectfully requests the Examiner to hold in abeyance the rewriting of these claims until the Examiner has had the opportunity to reconsider the rejected parent claims in light of the arguments presented below in support of the Applicant's traverse of the rejection.

Claims 1 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly cited Lathrop (USP 3,991,363) in view of Rider et al. (USP 5,361,029; hereafter "Rider"). Applicant respectfully traverses the rejection.

With regard to independent claims 1 and 9, the Examiner correctly concedes that Lathrop does not disclose rectifying a first component of the earth leakage signal corresponding to a first frequency component of the applied signal, multiplying a rectified first component of the earth leakage signal with a second component of the earth leakage signal corresponding to a second frequency component of the applied signal and determining a direction from the device to the fault based on a result of the multiplication. However, the Examiner cites column 24, lines 52-68 of Rider for allegedly disclosing these features of the claimed invention, and asserts that it would have been obvious to modify Lathrop "by employing the well know or conventional

features of cable fault/locator technology, such as disclosed by Rider, in order to reduce the time to trace multiple lines with minimized signal interferences ....”

Applicant respectfully submits that the claimed invention would not have been rendered obvious in view of Lathrop and Rider because (1) the cited references, alone or in combination, do not teach or suggest all of the features of the claims, and (2) one of ordinary skill in the art would not have been motivated to combine and modify the cited references to produce the claimed invention.

Lathrop discloses a method and apparatus for detecting an electrical leakage path fault in the insulation of a buried conductor by first applying a composite signal comprising a test signal and a carrier signal modulated by the test signal between the conductor and earth. The two components of the composite signal are then sensed at locations along the path of the conductor. The sensed carrier signal is used by itself while its modulation content is used with the sensed test signal to trace the conductor to the fault.

Rider discloses a system for locating and distinguishing between multiple cables by applying a different signal to each cable. Rider does not place multiple signals on the same cable or combine signals of different frequency from the same cable. Moreover, Rider does not teach or suggest determining the location of an underground fault in a cable or the direction from the receiver to a fault. Instead, Rider simply discloses determining the location of the cables (so that they are not dug up, particularly on a building site) by discriminating between different cables and determining depths of the cables using multiple antennas.

Rider does not teach or suggest those features of the claimed invention which are missing

from Latham. In particular, the cited section of Rider (column 24, lines 52-68) does not teach or suggest multiplying a rectified first component of the earth leakage signal with a second component of the earth leakage signal corresponding to a second frequency component of the applied signal and determining a direction from the device to the fault from the result of the multiplication, as required by the claims. Instead, the cited section of Rider simply discloses a signal LOWER from a first antenna (channel A) and a signal UPPER from a second antenna (channel B) are separately rectified and averaged to generate detected signals for channels A and B. The depth of a radiating signal source (underground cable) is computed by calculating the ratio of the signal from channel A relative to the signal from channel B, multiplying the ratio by a correction coefficient, which compensates for gain error differences between channels A and B. The result is then subtracted from "1" and the reciprocal is derived. This result is then multiplied by a coefficient equal to the distance between the axes of the first and second antennas. See Figs. 8A and 8B of Rider.

The rectification described in Rider is a well known method for determining signal amplitude (not direction) from an alternating signal. Coupled with a filter it produces a single value which represents an average value for the signal. Multiplied by a constant it can produce an equivalent RMS value at a much cheaper cost than a full RMS circuit. Furthermore, the purpose of this amplitude determination is to allow comparison with another antenna so that the depth of the cable can be determined.

Accordingly, Rider simply teaches that two identical frequency signals from the same cable can be measured at two different points and their amplitudes compared to determine the

depth of the cable. This teaching of Rider is not analogous to the claimed invention nor can it be applied to Latham to produce the claimed invention. In other words, even if the method and apparatus of Latham are modified based on the teachings of Rider as proposed by the Examiner, the resulting method and apparatus would not include all of the features of the claims.

Further, Applicant respectfully submits that the one of ordinary skill in the art would not have been motivated to modify the method and apparatus of Latham based on the teachings of Rider as proposed by the Examiner since the proposed modification would impermissibly change the principle of operation of Latham and the resulting apparatus and method would no longer be satisfactory for its intended purpose (i.e., locating a fault).<sup>2</sup> That is, since the signal processing disclosed by Rider removes phase and direction information, modifying Latham to incorporate the signal processing disclosed by Rider would prevent determining the direction to the fault.

Accordingly, Applicant respectfully submits that claims 1 and 9 should be allowable over Latham and Rider.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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<sup>2</sup> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Similarly, if the proposed modification would render the prior art invention unsatisfactory of its intended purpose, then there is no suggestion or motivation to make the propose modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Patent Application No. 10/049,277

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Respectfully submitted,



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